

PRE-APPEAL BRIEF REQUEST FOR REVIEW

Docket Number

Q88921

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on _____

Application Number
10/541,848

Filed
July 12, 2005

Confirmation Number: 6754
First Named Inventor
Noriaki OKU

Signature
Typed or
printed name

Art Unit
1797

Examiner
Thuan D. DANG

Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.

This request is being filed with a Notice of Appeal.

The review is requested for the reason(s) stated on the attached sheet(s).

Note: No more than five (5) pages may be provided.

- ☒ The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

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☐ applicant/inventor.

Hui Chen Wauters

Signature

☐ assignee of record of the entire interest. See 37 CFR 3.71.

Hui C. Wauters

☐ Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96)

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March 18, 2011

Date

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.

☒ *Total of 1 form is submitted.

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of

Docket No: Q88921

Noriaki OKU, et al.

Appln. No.: 10/541,848

Group Art Unit: 1797

Confirmation No.: 6754

Examiner: Thuan D. DANG

Filed: July 12, 2005

For: METHOD FOR HYDROGENATING OLEFIN

PRE-APPEAL BRIEF REQUEST FOR REVIEW

MAIL STOP AF - PATENTS

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

Sir:

Pursuant to the Pre-Appeal Brief Conference Program, and further to the Examiner's Final Office Action dated October 19, 2010, Appellant files this Pre-Appeal Brief Request for Review. This Request is also accompanied by the filing of a Notice of Appeal.

Appellant turns now to the rejection at issue:

Claims 1 and 3-5 are pending and on appeal.

Claims 1 and 3-5 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Codignola (US 3,127,452).

This rejection should be reversed because Codignola does not disclose or render obvious the claimed invention.

The Examiner acknowledges that Codignola does not disclose (1) the superficial velocity of hydrogen gas, (2) the size of the catalyst and (3) the mole ratio of hydrogen and olefin.

However, the Examiner considers that it would have been obvious to have modified Codignola's process by selecting appropriate superficial velocities and the size of the catalyst to arrive at the claimed process.

Appellant respectfully disagrees.

First, important features of the claimed invention are the superficial velocity of the gas containing hydrogen, and the flow direction of the gas containing hydrogen and the liquid containing an olefin through a solid hydrogenation catalyst bed.

However, Codignola does not teach superficial velocity at all. Therefore, there is no guidance in Codignola for one of ordinary skill in the art to have modified Codignola's process by selecting appropriate superficial velocities, since superficial velocity was not taught by Codignola at all.

Second, a particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation. See, MPEP 2144.05.IIB. Here, since Codignola does not teach superficial velocity at all, it would not have been obvious for one of ordinary skill in the art to select an appropriate superficial velocity of the hydrogen to operate the process at an optimized production of the desired product. In other words, it would not have been obvious and it would not have been routine experimentation for one of ordinary skill in the art to have modified the process of Codignola to arrive at the claimed process.

Third, Appellant has determined the superficial velocity of the gas in Codignola from the reaction conditions described in Example 1 (1), (2) and (3) of Codignola as follows:

Cross-sectional area of reactor = $(26/2 \times 10^{-3})^2 \times \pi = 0.00053 \text{ m}^2$ (see, col. 2, lines 10-11
“a bore of about 26 mm”)

Example 1:

(1) 10 normal liters hydrogen, 92 °C, atmospheric pressure (see, col. 2, lines 32-35)

(Here, the velocity of hydrogen supplied is interpreted as 10 normal liters (NL) /hour (h).)

$$10 \text{ NL/h} = 10 \times 10^{-3} \text{ Nm}^3/\text{h} = 0.01 \text{ Nm}^3/\text{h}$$

$$\text{Superficial velocity} = (0.01 \text{ m}^3/0.00053 \text{ m}^2)/(3600 \text{ sec}) \times (273+92)/273 \times 100 = \underline{\underline{0.7}}$$

cm/sec

(2) 7.8 normal liters hydrogen, 95 °C, atmospheric pressure (see, col. 2, lines 35-38)

$$\text{Superficial velocity} = (7.8 \times 10^{-3}/0.00053)/3600 \times (273+95)/273 \times 100 = \underline{\underline{0.55 \text{ cm/sec}}}$$

(3) 6.7 normal liters hydrogen, 96.5 °C, atmospheric pressure (see, col. 2, lines 39-42)

$$\text{Superficial velocity} = (6.7 \times 10^{-3}/0.00053)/3600 \times (273+96.5)/273 \times 100 = \underline{\underline{0.48 \text{ cm/sec}}}$$

From the above calculations, it is apparent that the superficial velocity in Example 1 (0.48-0.7 cm/sec) of Codignola is much lower than that specified in the present claims (3.0-10 cm/sec).

Accordingly, Codignola does not disclose or suggest the superficial velocity range specified in the present claims.

Further, Appellant submits that it is difficult and it is not obvious to one of ordinary skill in the art to determine the optimum conditions based on Codignola since Codignola discloses a range much lower than that in the present claims as discussed above.

Fourth, the Examiner contends that the Codignola process is not limited by examples since it has been held that a disclosure in a reference is not limited to its specific illustrative

examples, but must be considered as a whole to ascertain what would be realistically suggested thereby to one of ordinary skill in the art.

However, as noted above, Codignola does not teach superficial velocity at all. Therefore, Codignola as a whole does not teach or suggest what is presently claimed.

Finally, the unexpected superior effects of the claimed invention, such as uniform flow of the liquid without localization in the packed bed, low pressure loss of the packed bed, and little formation of tar caused by olefin dimer formation and olefin polymer formation, can be attained by controlling the superficial velocity of gas to 3.0 to 10 cm/sec, and flowing the liquid and gas upwardly, and under the reaction conditions recited in Claim 1.

The superior effects of the claimed invention would not have been expected from Codignola, since Codignola does not even teach superficial velocity.

Further, the superior effects provided by the claimed invention are evidenced by Examples 1 and 2 and Comparative Examples 1 and 2 of the specification.

In Examples 1 and 2 of the specification, the superficial velocity of the gas was 7 cm/sec and 6.5 cm/sec, respectively, and the reaction amount of α -methyl styrene was 49 kmol/m³ catalyst/hr and 71 kmol/m³ catalyst/hr, respectively.

In Comparative Examples 1 and 2 of the specification, the superficial velocity of the gas was 2.7 cm/sec and 2.8 cm/sec, respectively, and the reaction amount of α -methyl styrene was 14 kmol/m³ catalyst/hr for Comparative Example 1 and 42 kmol/m³ catalyst/hr for Comparative Example 2.

For the above reasons, the present claims are not obvious and are patentable over Codignola. Accordingly, Appellant respectfully requests reversal of the §103(a) rejection based on Codignola.

Allowance is respectfully requested.

Respectfully submitted,

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